



Better Buildings Residential Network Peer Exchange Call Series: *Master Key: Unlocking Innovative Approaches to Program Design*

April 6, 2017

Call Slides and Discussion Summary

Agenda

- Agenda Review and Ground Rules
- Opening Polls
- Brief Residential Network Overview and Upcoming Call Schedule
- Featured Speakers
 - **Beth Karlin**, Founder, See Change Institute
 - **Laura Capps**, Strategic Planning Manager, Efficiency Vermont (*Network Member*)
 - **Michael Lukasiewicz**, Managing Partner, Navitas Partners, Inc
- Discussion
 - What innovative program design approaches have you used to increase program reach? What has worked well for your organization and what were the results of such efforts?
 - What opportunities and challenges have you encountered in reimagining your residential design program?
 - What is important to consider when incorporating new program design approaches?
 - Other questions/issues related to innovative program design approaches?
- 2 ■ Closing Poll

Better Buildings Residential Network

Better Buildings Residential Network: Connects energy efficiency programs and partners to share best practices and learn from one another to increase the number of homes that are energy efficient.

Membership: Open to organizations committed to accelerating the pace of home energy upgrades.

Benefits:

- Peer Exchange Calls 4x/month
- Tools, templates, & resources
- Recognition in media, materials
- Speaking opportunities
- Updates on latest trends
- Voluntary member initiatives
- Residential Program Solution Center guided tours

Commitment: Provide DOE with annual number of residential upgrades, and information about associated benefits.

For more information or to join, email bbresidentialnetwork@ee.doe.gov, or go to energy.gov/eere/bbrn and click Join

Peer Exchange Call Series

***We hold one Peer Exchange call the first four Thursdays of each month
from 1:00-2:30 pm ET***

Calls cover a range of topics, including financing & revenue, data & evaluation, business partners, multifamily housing, and marketing & outreach for all stages of program development and implementation

Upcoming calls:

- April 20: [Two Is More Than One: Leveraging Strategic Partners](#)
- April 27: [Just What the Doctor Ordered: Integrating Health Benefits into Energy-Efficiency Programs](#)
- May 4: [Multifamily-Focused Network Collaborations](#)
- May 11: [Are You Ready? Opportunities and Challenges of Home Energy Management Systems](#)

Send call topic ideas to peerexchange@rossstrategic.com

See the Better Buildings Residential Network Program [website](#) to register

Best Practices: See Change Institute

From Categorizing to Characterizing Landscape Analysis of Behavior-Based Energy Programs

Beth Karlin

SEE Change Institute

bkarlin@seechangeinstitute.com



Co-authors:

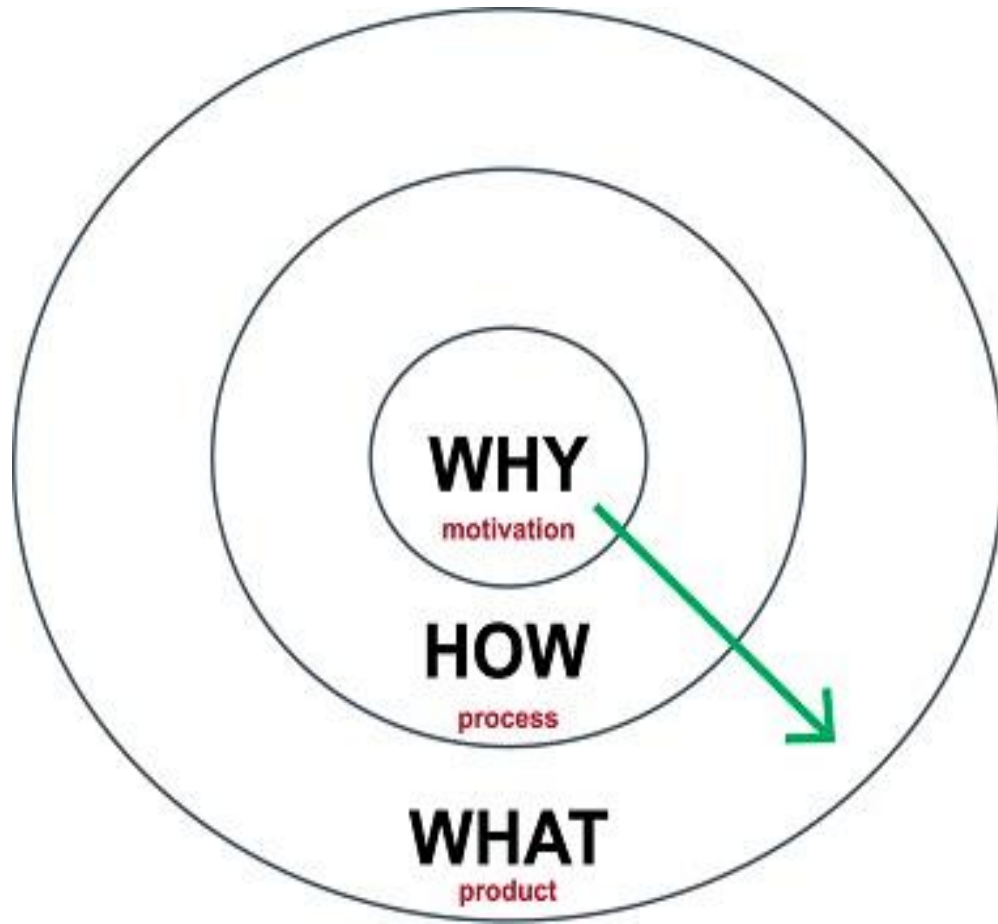
Lea Lupkin, SEE Change Institute
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Hale Forster, Columbia University
Lisa Zaval, Columbia University

This work was conducted in collaboration with:



Together, Building
a Better California



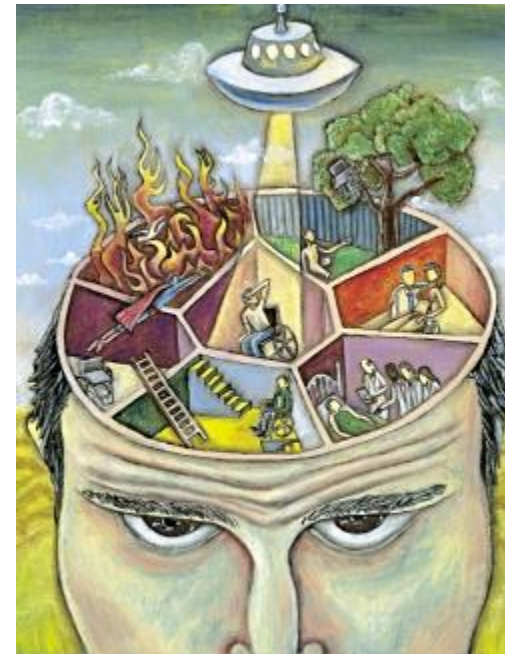




Individual Actions Can Make a Difference...



... And Social Science Can Help.



The Role of Social Science

1. Understanding behavior

- Primarily survey and ethnographic research
- Habits, attitudes, social context, demographics

2. Integrating theory

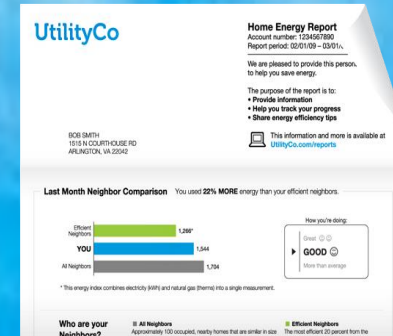
- Leverage past research in other domains
- Identify stable mechanisms across behaviors

3. Identifying and testing strategies

- Primarily experimental and quasi-experimental
- Strategies include: goals, incentives, framing, feedback

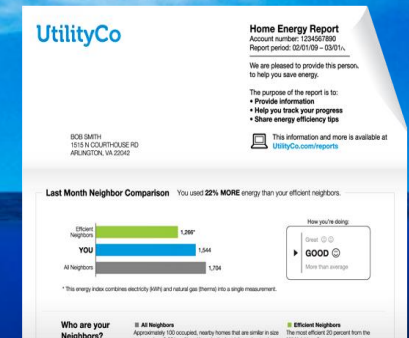
What is a behavioral program?

Home Energy Reports (HERs)

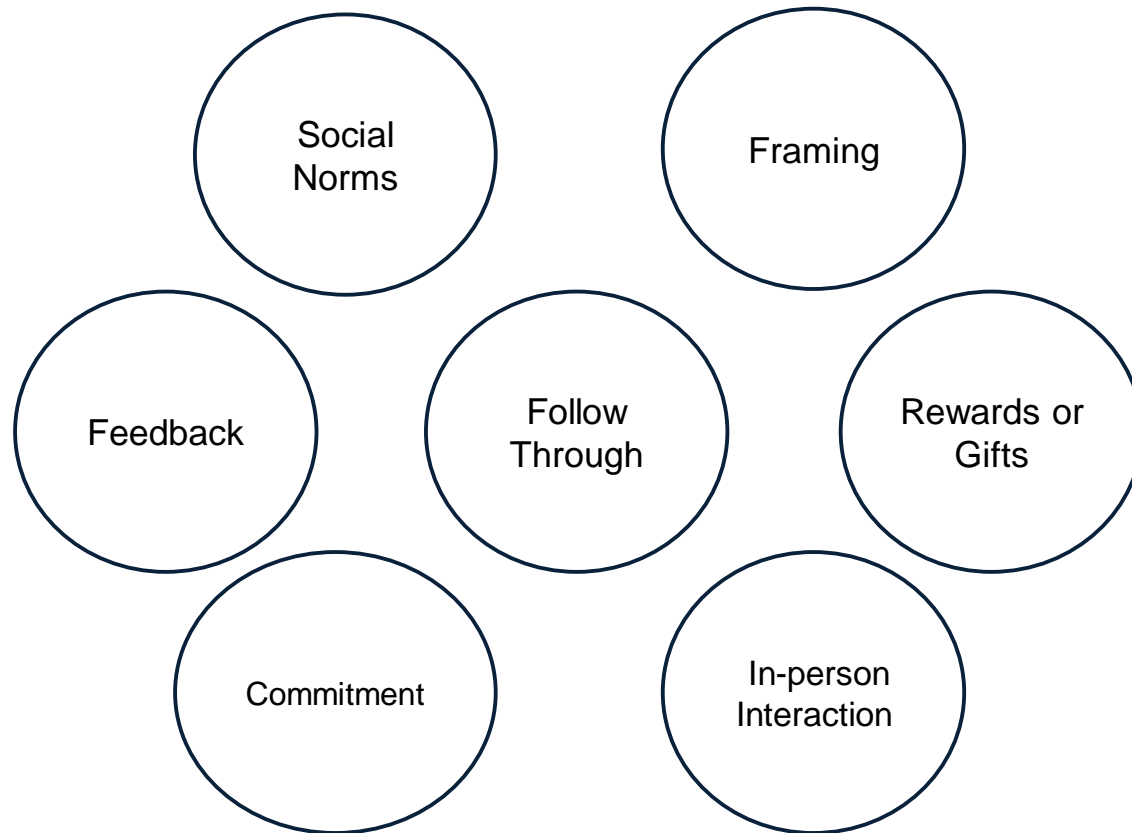


California
Circa 2012-2016

Behavior

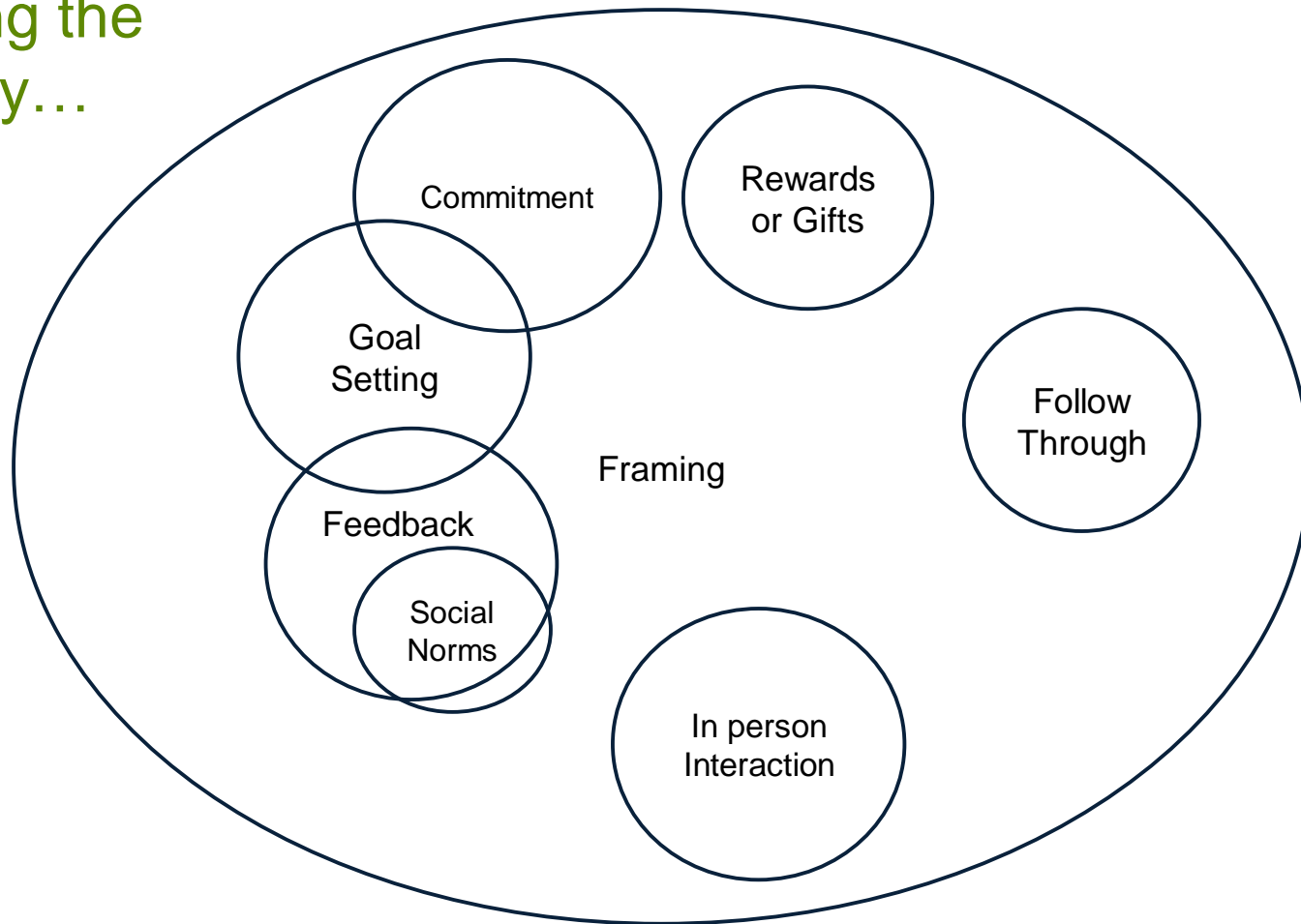


Paving the Way...

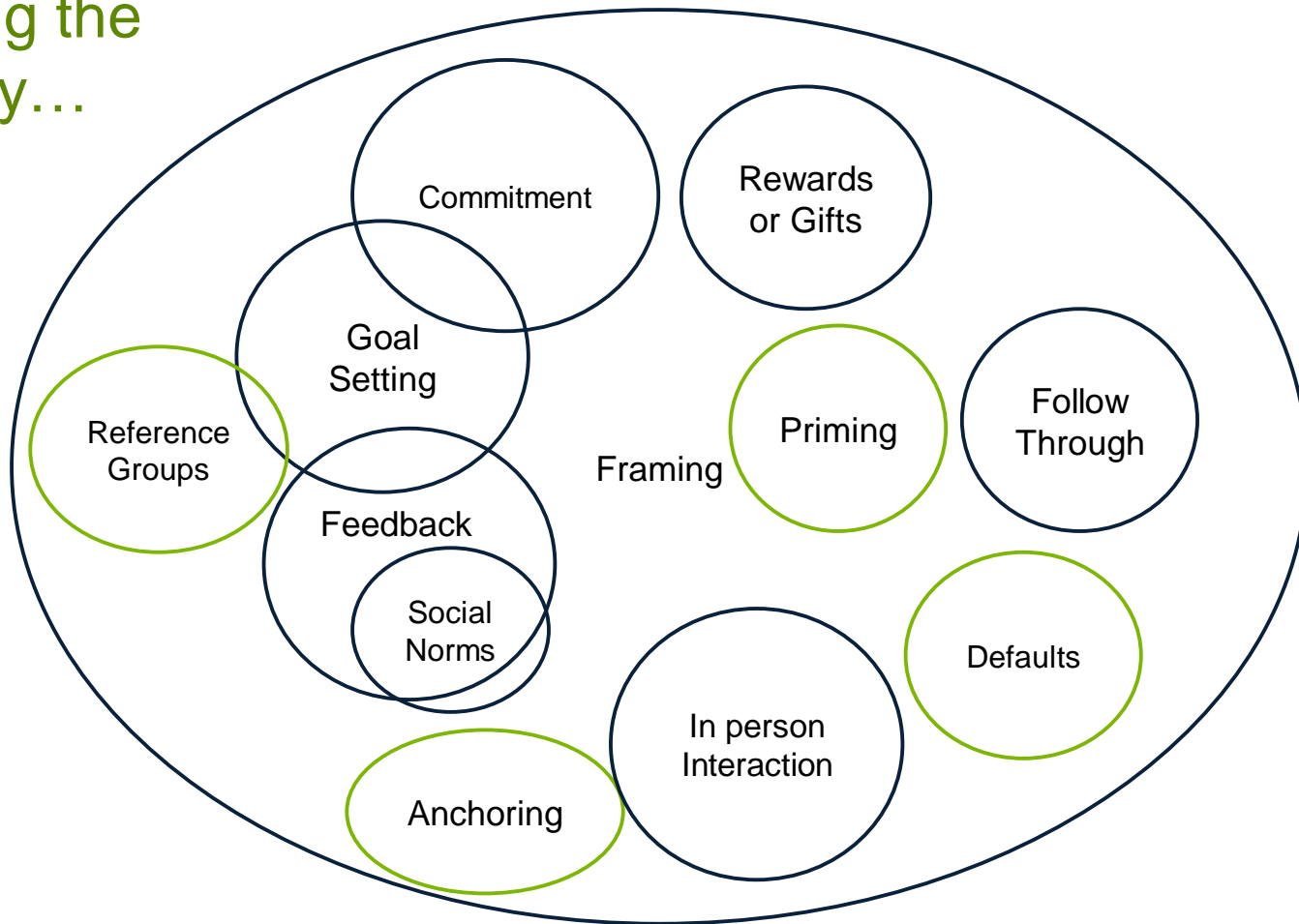


Ignelzi et al. (2013). Paving the Way for a Richer Mix of Residential Behavior Programs.
Prepared for the California Investor-Owned Utilities.

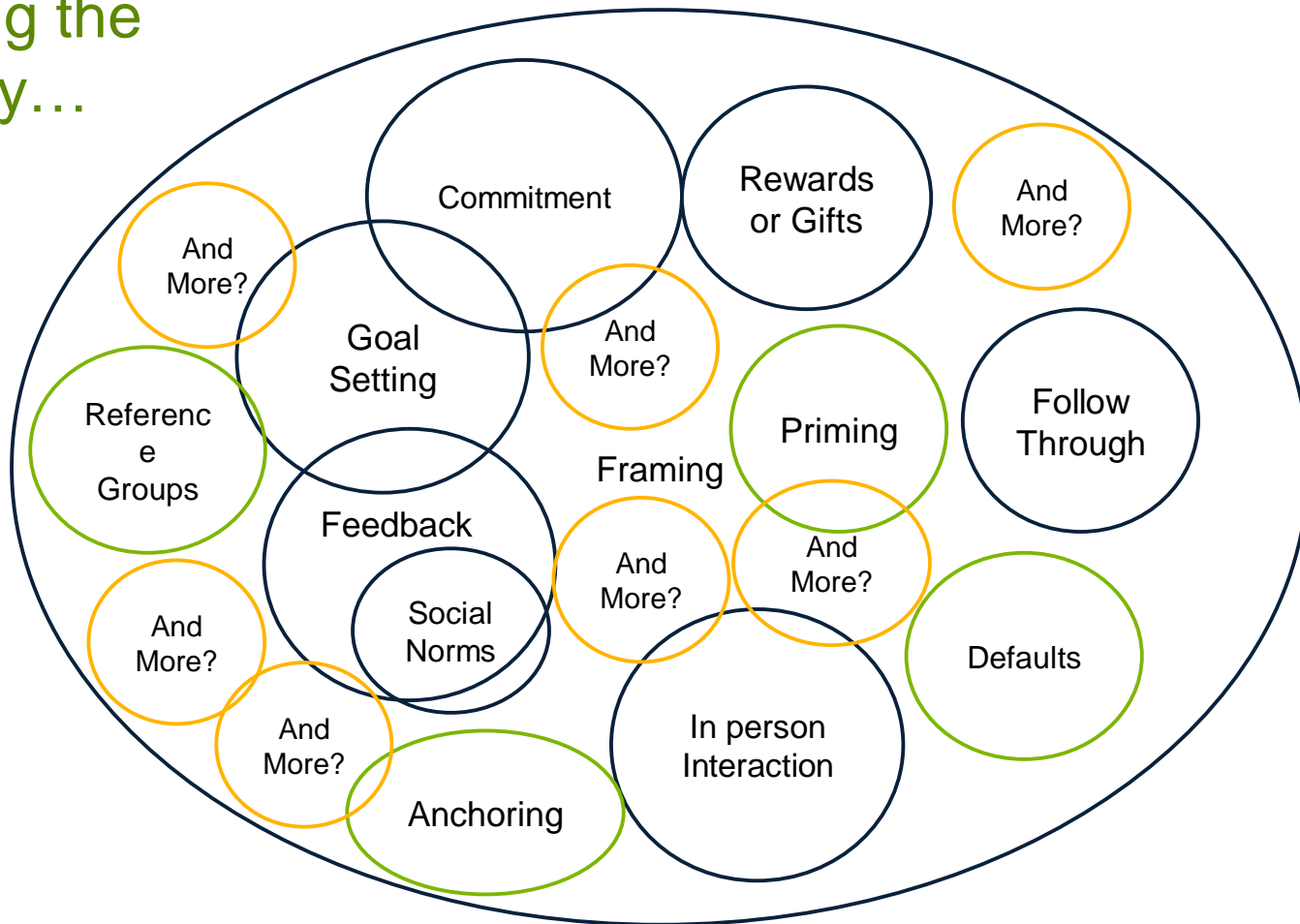
Paving the Way...



Paving the Way...



Paving the Way...



Extending the Model

Cognition

Communication efforts

General

- Cable or broadcast TV
- Radio
- Billboards
- Other traditional media outlets

Targeted

- Enhanced billing
- Direct mail
- Bill inserts
- User-friendly bill designs

Medium

Social media

- Facebook
- Twitter
- Tumblr
- Blogs

Education and training

In schools

- K-12
- Higher education

In companies or institutions

- Commercial
- Industrial

Population

Calculus

Feedback

- Real-time
- Asynchronous

Temporality

Games

- Competitions
- Challenges
- Lotteries

Incentives

- Cash
- Rebates
- Subsidies

Home energy audits

- Audit only
- Audit+

Installation

- Direct install
- DIY

Staffing

Social interaction

Human scale

- Community-based social marketing
- Person-to-person
- Peer champions
- Eco-teams

Messenger

Online forums

Gifts

Mazur-Stommen, S., and Farley, K. (2013). ACEEE Field Guide to Utility Run Behavior Programs. Washington, DC: ACEEE.

Extending the Model

Cognition

Communication efforts

General

- Cable or broadcast TV
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- Other traditional media outlets

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- **Enhanced billing**
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Installation

- Direct install
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+ **Advice/tips**

Social interaction

Human scale

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Online forums

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Example:
Home Energy Reports

Mazur-Stommen, S., and Farley, K. (2013). ACEEE Field Guide to Utility-Run Behavior Programs. Washington, DC: American Council for an Energy-Efficient Economy.

Testing Programs?



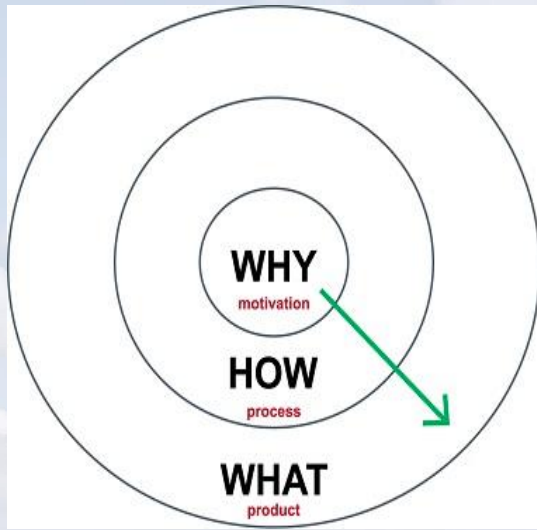
So What's the Alternative?

Categories



Characteristics





Methods

Research Design

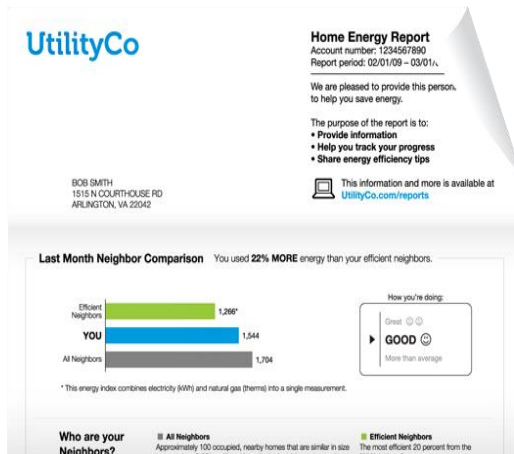
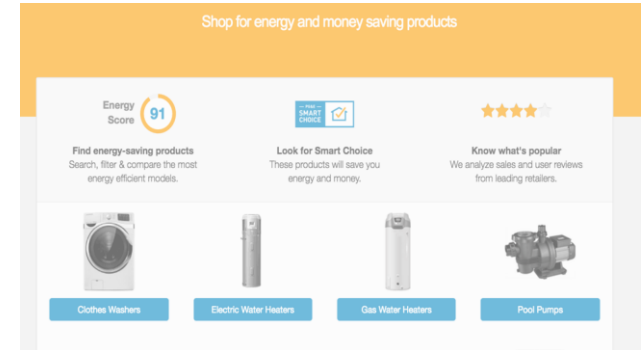
In order to understand the current landscape of programs:

1. Identify “behavioral” **programs** (harder than it sounded)
2. Categorize key **components** used throughout programs
3. Assess **methods** used for evaluation, measurement, and verification
4. Identify **opportunities** for future programs based on findings

Data Collection

- Inclusion Criteria
 - Targeted residential or SMB customers
 - Focused on energy efficiency / conservation (DR analyzed separately)
 - Identified 12 programs
- Data Collection / Analysis
 - Semi-structured interviews with program manager (and vendor, when possible)
 - Reviewed program materials (online, print)
 - Assessed evaluation and reporting (when available)

Sample (the landscape)



Program Characteristics

Audience

- Sector
- Income
- Ownership

Behavior

- Specificity
- Dimension

Content

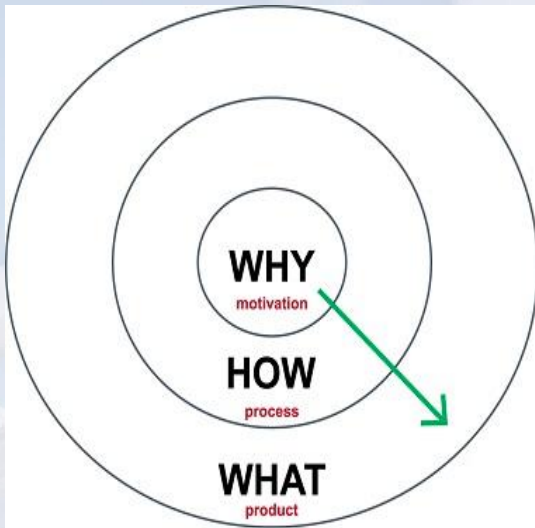
- Strategy
- Framing

Delivery

- Frequency
- Timing
- Duration
- Medium
- Messenger

Evaluation

- Study Design
- Savings Calculation



Findings

Audience

- Current behavioral programs primarily target residential customers, leaving potential untapped opportunities in commercial sector
- Programs with similar goals and target audiences run by different administrators / vendors do not connect or “talk to” each other



Behavior

- Many current programs promote multiple energy conservation behaviors or a general “energy savings” goal
 - Programs can emphasize **high-impact behaviors** (Bertrand et al., 2010) or **group behaviors** by end use (e.g., lighting) or action (e.g., maintenance)
- Individual programs often missed opportunities to **promote “sister” programs or capture additional savings behaviors**
 - Programs can provide option to refer friends, family, and neighbors



Content

- A diverse set of strategies supported by behavioral science are already employed. However, [only half intentionally or explicitly drew on behavioral science](#) to design and test programs.
- Messaging is primarily financial; suggests additional [opportunities to leverage research findings on non-financial messaging](#) (e.g., Delmas et al., 2013; Nolan et al., 2009)



(Nolan et al., 2008)

Delivery

- While some were one-time interventions, many programs had **multiple touch points**. Few, however, had a **follow-up procedure**.
- Information provided via **in-person messengers** for 50% programs
- More than half used **more than one medium** including direct mail, social media, websites, groups or institutions, or in-home displays
- Opportunities exist to leverage **key moments** (e.g., move, appliance purchase, leak inspection, equipment replacement)



Evaluation

- Energy savings calculated using a **variety of methods**
 - 5 programs used ex ante savings
 - 3 used randomized controlled trials
 - 1 used direct meter measurements
 - 4 did not measure energy savings or only did it as exercise
- Evaluation strategies measured program effects but were **not consistently designed to support program optimization**
 - Programs encouraged to test **variables**, not just programs

Example 1: Schools Program

Audience

- School staff
- Students

Behavior

- Specificity
- Dimension

Content

- Competition
- Prompts
- Framing: Social Norms

Delivery

- In-person
- 2x/year

Evaluation

- Measured savings during program
- Pre-post, no control group

Example 2: Middle Income Direct Install

Audience

- Low-income/rate assisted customers

Behavior

- Efficiency purchases and installation
- Curtailment behavior

Content

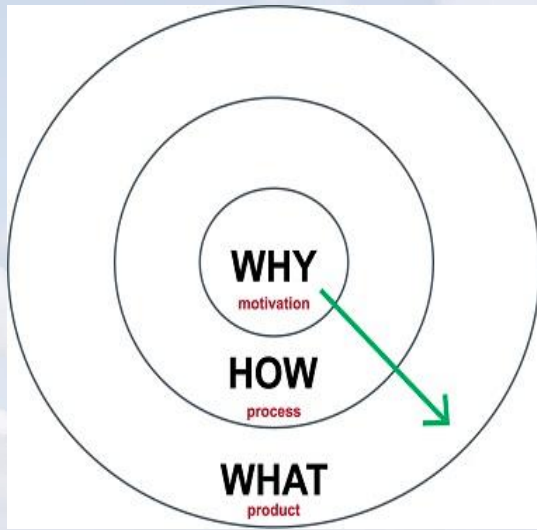
- Commitment
- Modeling
- Framing: Financial, comfort, convenience

Delivery

- In-person
- One-time

Evaluation

- Direct install measures deemed
- No data collected on behavioral savings



Recommendations

Three Key Recommendations

1. Leverage insights from behavioral science

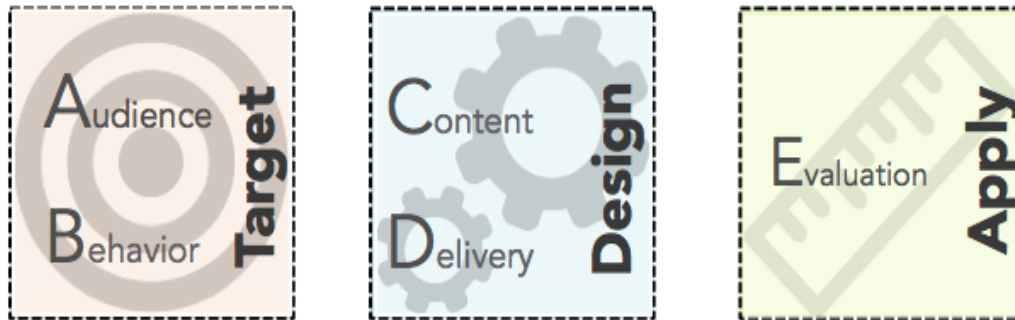
- Many opportunities across ABCDE characteristics
- E.g., segmentation, commitment, gamification, reminders



Three Key Recommendations

1. Leverage insights from behavioral science
2. Develop systematic process based on variables approach

BEHAVIOR PROGRAM FRAMEWORK



TARGET: Audience & Behavior



- Conduct **market / literature review** to identify key opportunities
 - e.g., review of current market identifies that low-income residents have high potential for savings with smart thermostats
- **Observational research** of customers to identify values/preferences
 - e.g., field observation and interviews at local retailers to identify key factors influencing purchase decisions

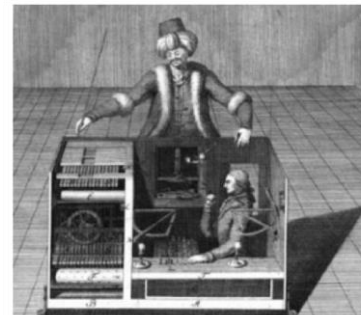
DESIGN: Content & Delivery



- Conduct **user testing** to support program design
 - e.g., Identify optimal mediums and timing for messengers to reach homeowners by running a user test with small audience sample
- **A/B test** to optimize program variables
 - e.g., A/B test collaboration vs. collaboration for most effective frame to increase participation and efficient product sales (Froehlich, 2015)



User Testing (Prototyping)



A/B Testing (Pretotyping)

APPLY: Evaluation



- Conduct **pilots** to refine program design
 - RCT or randomized encouragement design can control for self-selection.
 - Pre-post data collection difference of difference analysis to infer whether savings can be attributed to the program.
- Measure **behavioral spillover**
 - e.g., For a community program, data collection can extend from school/church/business buildings to homes to measure behavioral spillover

Three Key Recommendations

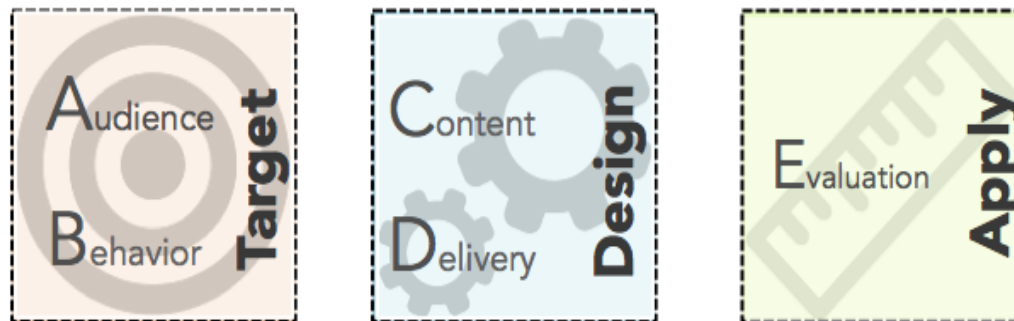
1. Leverage insights from behavioral science
2. Develop systematic process based on variables approach
3. Develop capacity to support programs
 - Information capacity
 - Internal staff capacity
 - Collaborative capacity



Next Steps

- Developing training with utility staff
- Piloting framework with new programs
 - Identify and test characteristics throughout the process

BEHAVIOR PROGRAM FRAMEWORK



Thank you!

Read More at:

<http://etcc-ca.com/reports/behavioral-landscape-analysis>

Special thanks to PG&E collaborators:
Susan Norris, David Thayer,
Kimberly Conley, and Jeff Beresini

Beth Karin, See Change Institute

Lea Lupkin, SEE Change Institute

Rebecca Ford, University of Oxford

Sena Koleva, SEE Change

Institute

Hale Forster, Columbia University

Lisa Zaval, Columbia University



Together, Building
a Better California



Presentation Highlights: See Change Institute

- **Social science plays a role in energy efficiency programs**; achieving energy savings through programming that targets changes in behavior requires that programs understand why we do the things that we do and integrate those theories into effective strategies.
- Behavioral programs are **more complex than you might think**. The elements that influence behavior reach beyond a discrete set of strategies or behavioral models.
 - **It's like building with Legos**: different types of program strategies can be stacked or combined in different ways.
- See Change performed a **landscape analysis** covering 12 different behavioral energy efficiency programs, including residential and small business programs and assessed five categories: audience, behavior, content, delivery, and evaluation.
- Based on the findings, See Change recommends that programs develop and use a **systematic process that tests different variables** against each other to evaluate what's most effective when designing new programming.
 - Too often programs are **comparing different program design strategies to nothing** rather than comparing different program characteristics.
 - For effective program design, programs must learn **how and for whom programming works**.
 - There's no out of the box solution!

Additional Resources

- Normative Social Influence is Underdetected (Nolan et. al, 2008)
 - Study that found descriptive normative beliefs (e.g., a person's beliefs about the behavior of their neighbors) were more predictive of energy conservation behavior than other relevant beliefs, like protecting the environment or saving money.
- Nonprice incentives and energy conservation (Asensio and Delmas, 2015)
 - Study that found environment and health-based information strategies that communicated the environmental and public health externalities of electricity use, were more effective at driving changes in energy consumption behavior than messaging about saving money.

Best Practices: Vermont Energy Investment Corporation (VEIC)

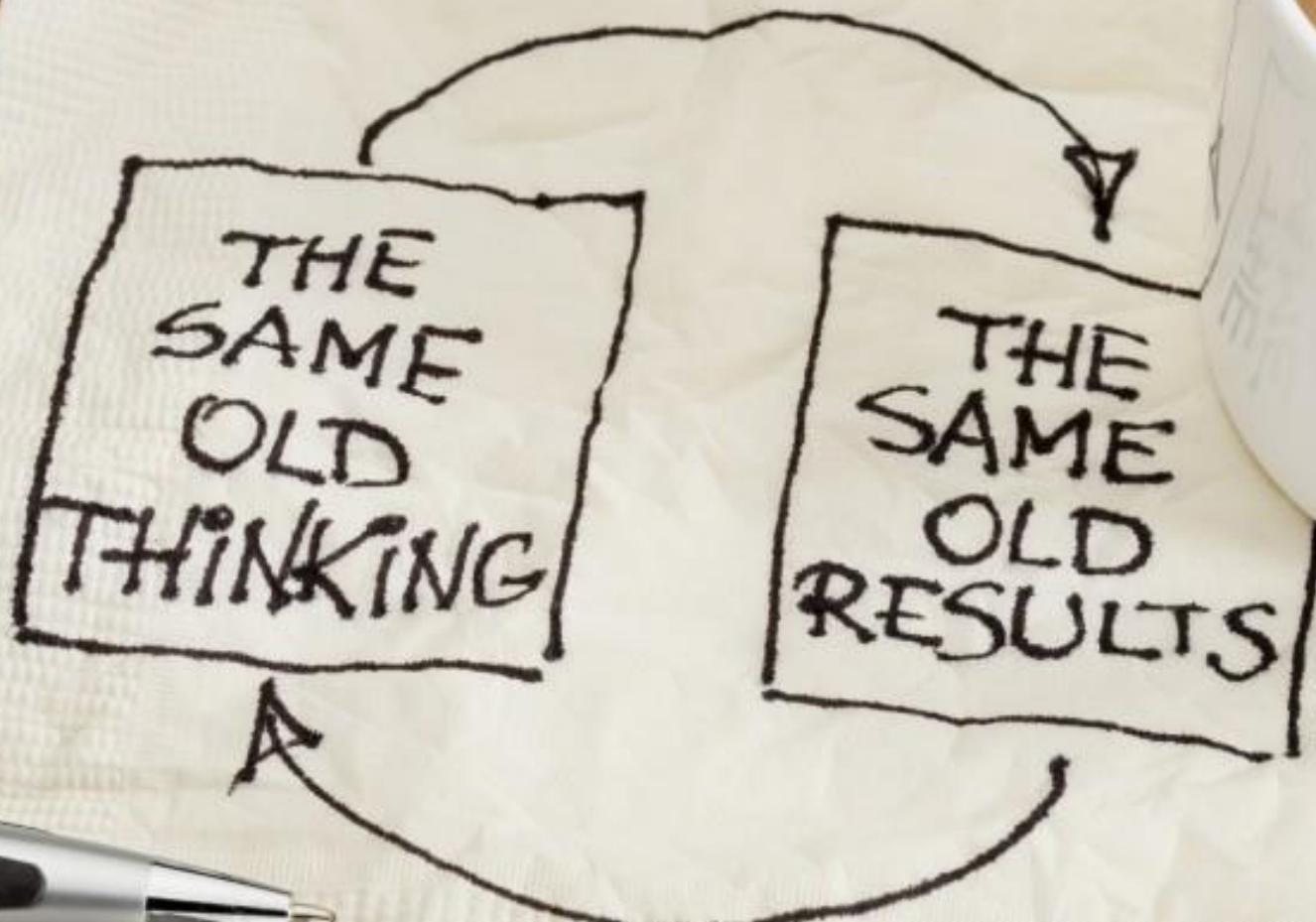


ACCELERATING INNOVATION:

From Vision to Customer-Tested Prototype in just 4 Days

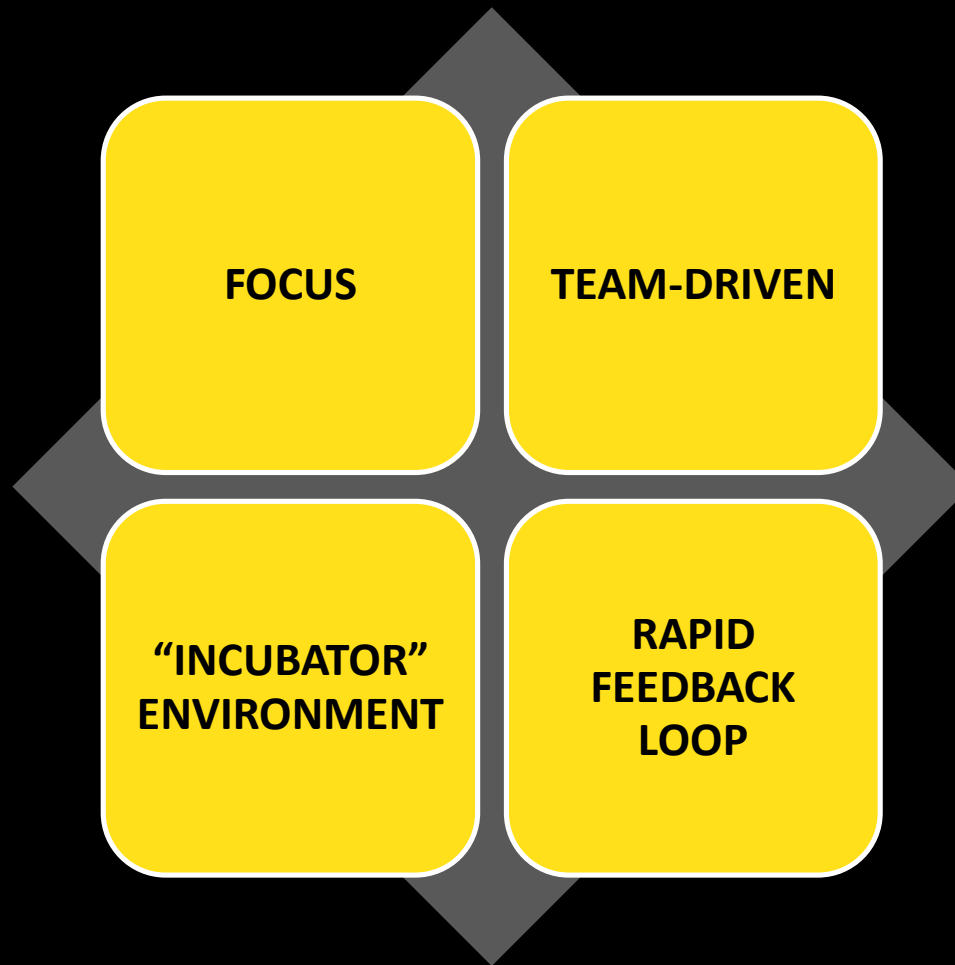
Laura Capps

Strategic Planning Manager, Efficiency Vermont

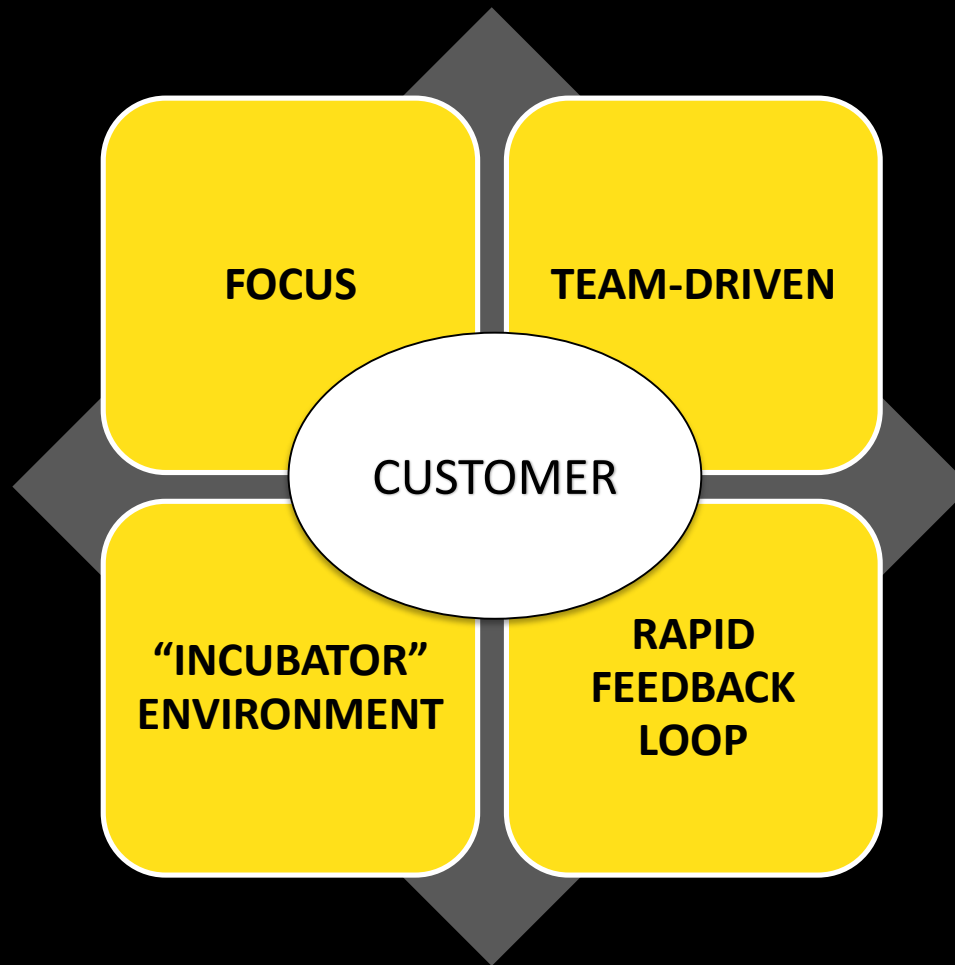


A sprint is a facilitated process that uses Design Thinking exercises to support a team in rapidly





A sprint incorporates four critical aspects of successful product/program innovation.



What makes a Sprint so powerful is that it aligns team members around what customers want.

Sprints are effective for...

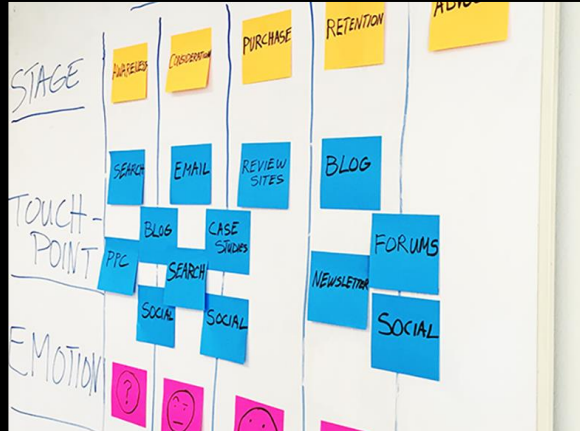
- High-priority/Fast-moving projects
- Digital solution design
- Program design/optimization
- Reaching new customer segments
- New offers/offerings



DAY 1: Visioning & Inspiration

Align on where you're headed – and what you need to know in order to get there.

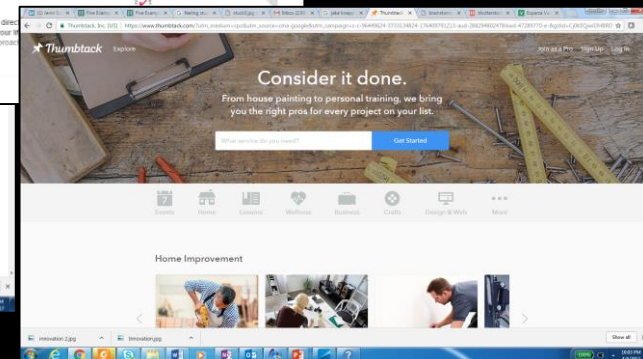
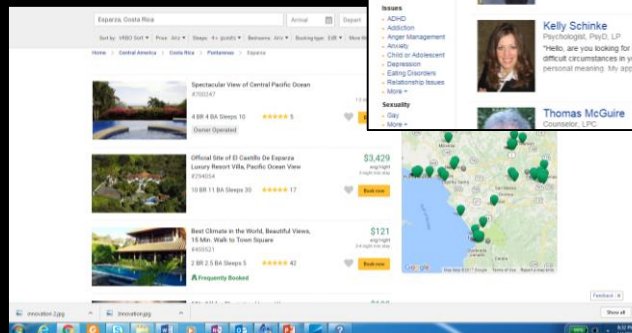
Get inspired.



Map the Customer Experience

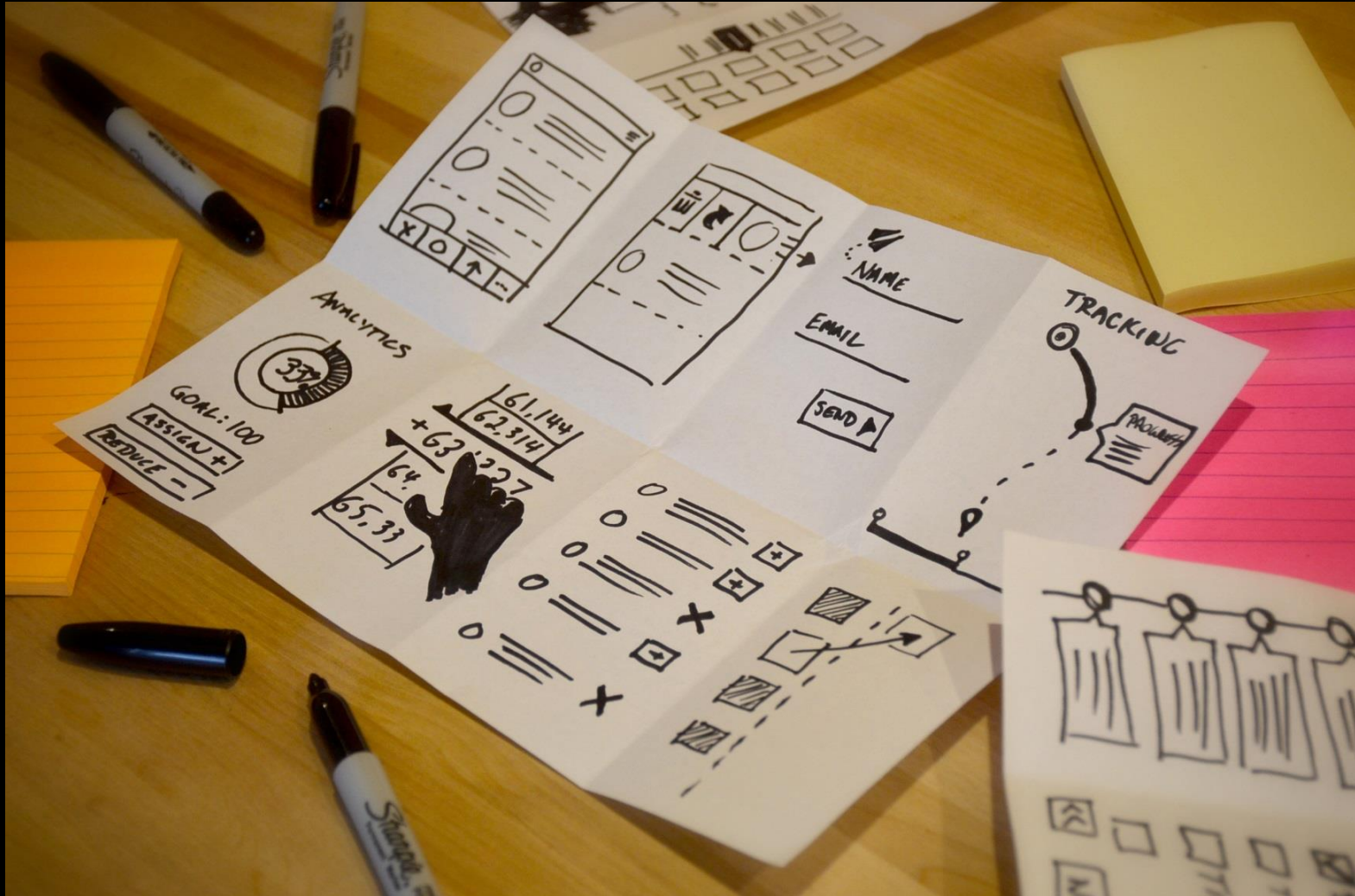


Interview experts.

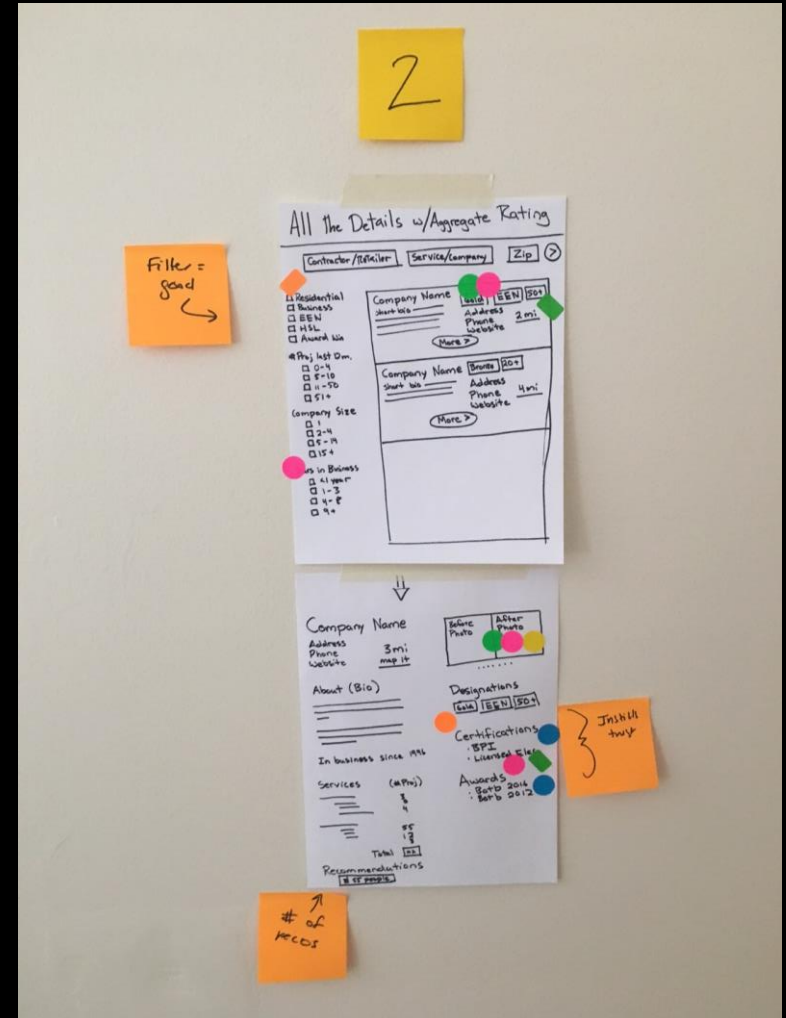


Share sources of inspiration from other industries.

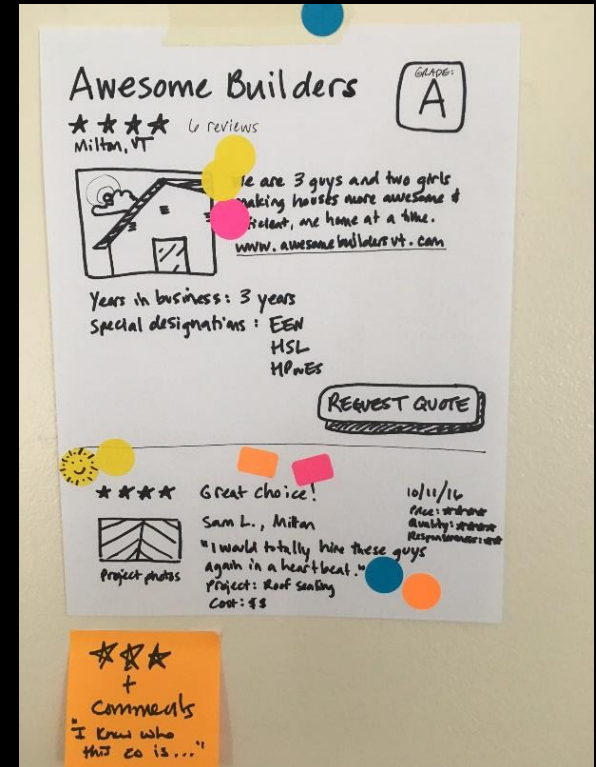
Generate as many ideas as possible in 8 minutes.



Build out concepts based upon the ideas generated.



“Heat map” the concepts to show what you like. This guides the selection process.



Create a storyboard that aligns team members on what will be prototyped the next day.

Page 1

Page 2

Page 3

Page 4

GET THE JOB DONE

Page 1
top

Instructions

ASE AIN Contractors

Each ASE AIN contractor has an insured list of ASE AIN partners. ASE AIN partners are up to date on the latest ASE AIN programs and are committed to energy efficiency.

Browse Directory Click here for contractor selection tips.

Choose a Service (click/drop down)

Location

24 contractors match your search criteria.

Is this helpful?

Find a Contractor

Find a Contractor

Filter Search Filter Results

Awesome Builders

12 years in business

10 reviews

View Details

Random Heating & Ventilation

View Details

10 reviews

View Details

Stars and reviews on page 2 + 3

Awesome Builders

Awesome Builders

12 years in business

10 reviews

View Details

Random Heating & Ventilation

View Details

10 reviews

View Details

Version A: Stars + Customer reviews

Version B: Endorsements

INTAKE FORM

INTAKE FORM

NAME: [Text Box] [Text Box]

PHONE/EMAIL: [Text Box] [Text Box]

TYPE OF WORK: [Text Box]

MY LOCATION: [Text Box]

WHEN? [Text Box]

INFO ABOUT WORK: [Text Box]

DESIGNATIONS: [Text Box]

CERTIFICATIONS: [Text Box]

AWARDS: [Text Box]

"We encourage contractors to contact you within 72 hours"

EVV hours when customers contact contractors -> Addressing Responses!

If no one responds, who do you expect EVV to do?

What info is unnecessary?



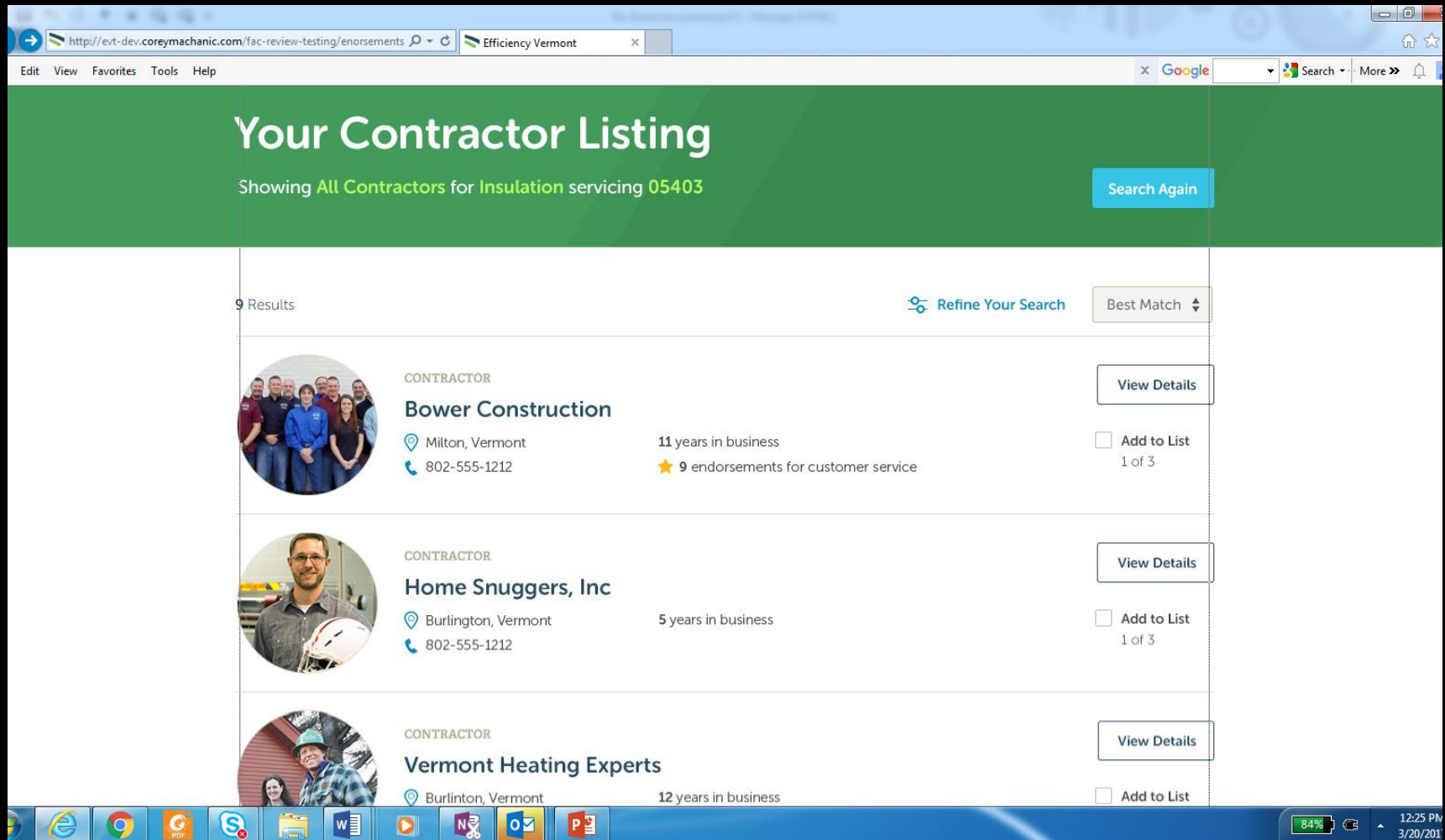
Vermont Energy Investment Corporation



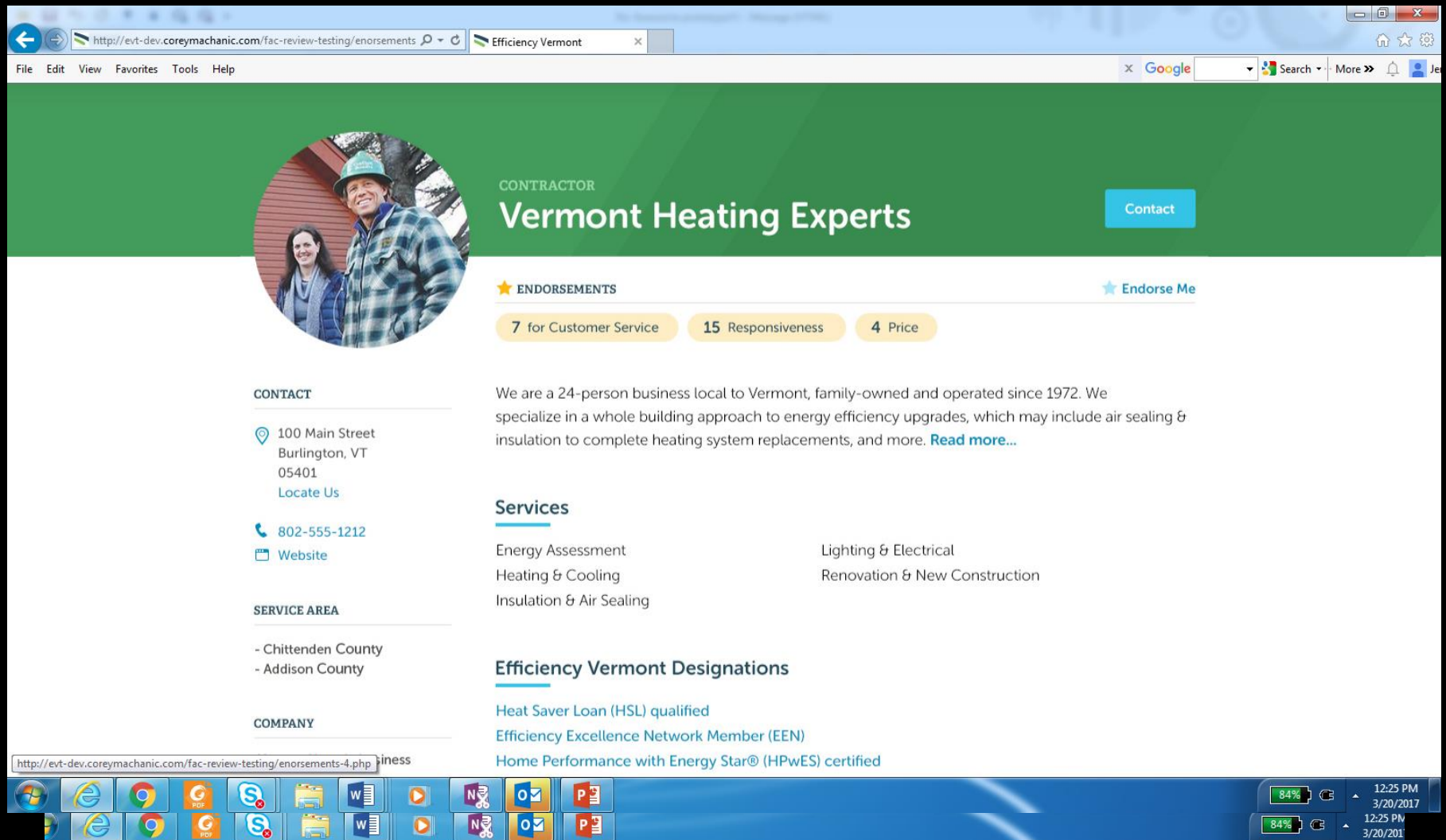
DAY 3: Prototype Development



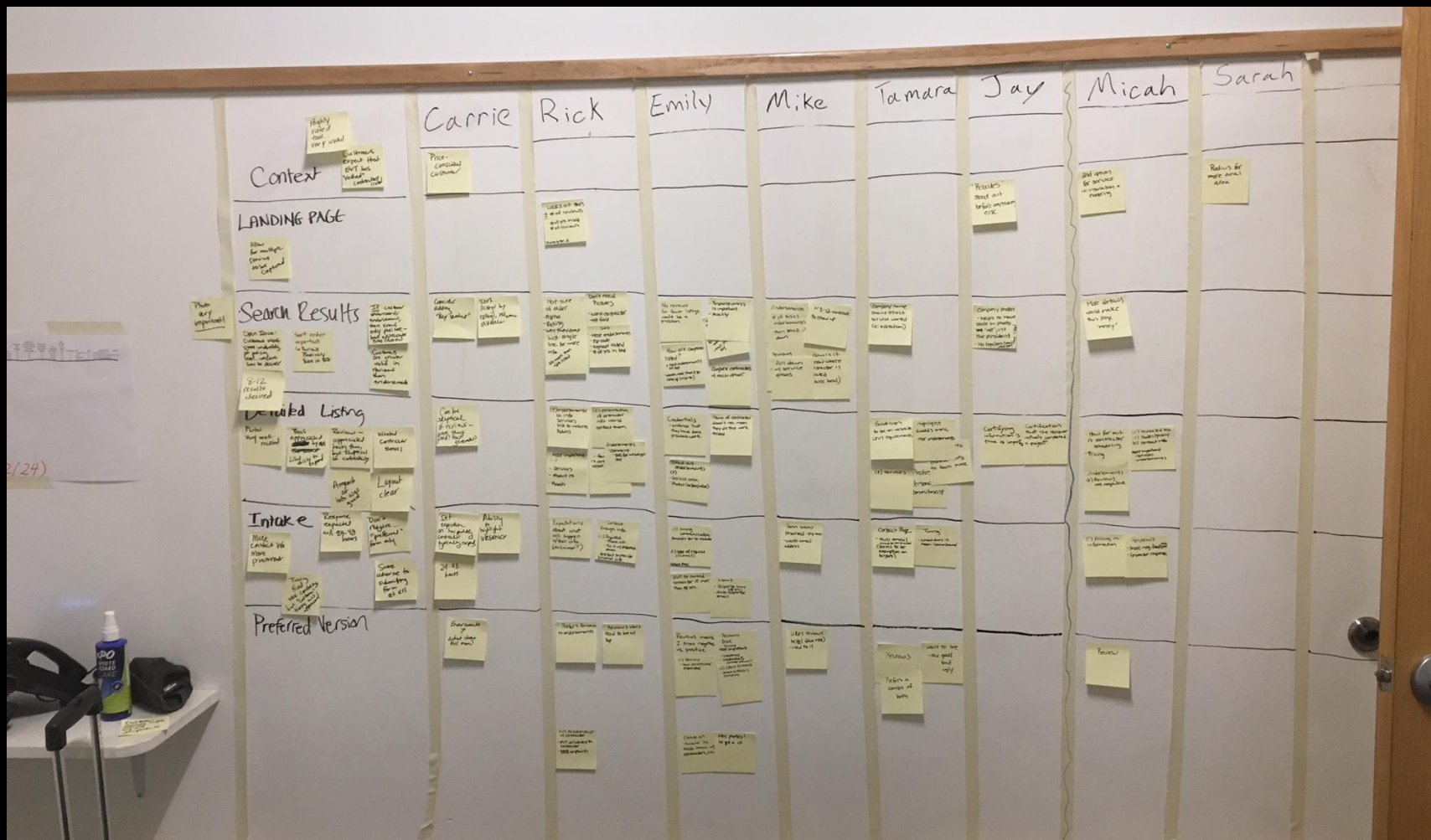
Develop a prototype that will elicit answers to your most important questions.



Make the prototype as real as possible.



Capture key insights and debrief afterwards.



Want to learn more?

Sprint books:



Let's Connect!



Presentation Highlights: Vermont Energy Investment Corporation (VEIC) *(slide 1 of 2)*

- Design thinking can ensure help your program offerings meet the needs of your customers
- **“Sprints”** achieve early feedback on program design prototypes before full entry into the market
- Event Structure
 - **Short period of time** (e.g., 4 days) with a small, cross-disciplinary team; the customer is at the center of the process
 - **Brainstorm** ideas in sharpie, which requires that ideas are big and bold; draft concepts
 - **Heat map** mockups identify which concepts resonate most with the team; storyboard the best concepts
 - **Develop a prototype**; identify the design details that will lead to market success. The prototype needs to be as real as possible
 - **Test the prototype with customers** and conduct interviews; refine the model based on feedback
 - If the prototype meets customer desires, the team can start to build out the full program
 - If there are still questions or uncertainties, the team can repeat the sprint to develop new iterations of the prototype

Presentation Highlights: Vermont Energy Investment Corporation (VEIC) *(slide 2 of 2)*

- **You can learn just as much from a prototype that flops as one that soars**
 - The sprint minimizes your investment in time and resources to develop a prototype
 - This lowers the investment required for product development while ensuring your final product will match the market
- **The sprint won't provide you information with how you're doing to build out the new tool**
 - You still need to take the results and socialize them with your program and stakeholders
 - It can be helpful to record the customer interviews to use in discussions with others not involved in the sprint
- VEIC has used the sprint model on several projects, including revamping how contractors are represented on their website, testing direct shipping of LED light blurbs, and testing of supplying coupons with home energy visits

Best Practices: Navitas Partners, Inc

Retail Products Platform

Piloting an Innovative Midstream Energy Efficiency Program Design

Michael Lukasiewicz, Navitas Partners

DOE Webinar – Unlocking Innovative Approaches to Program Design
April 6, 2017



Overview

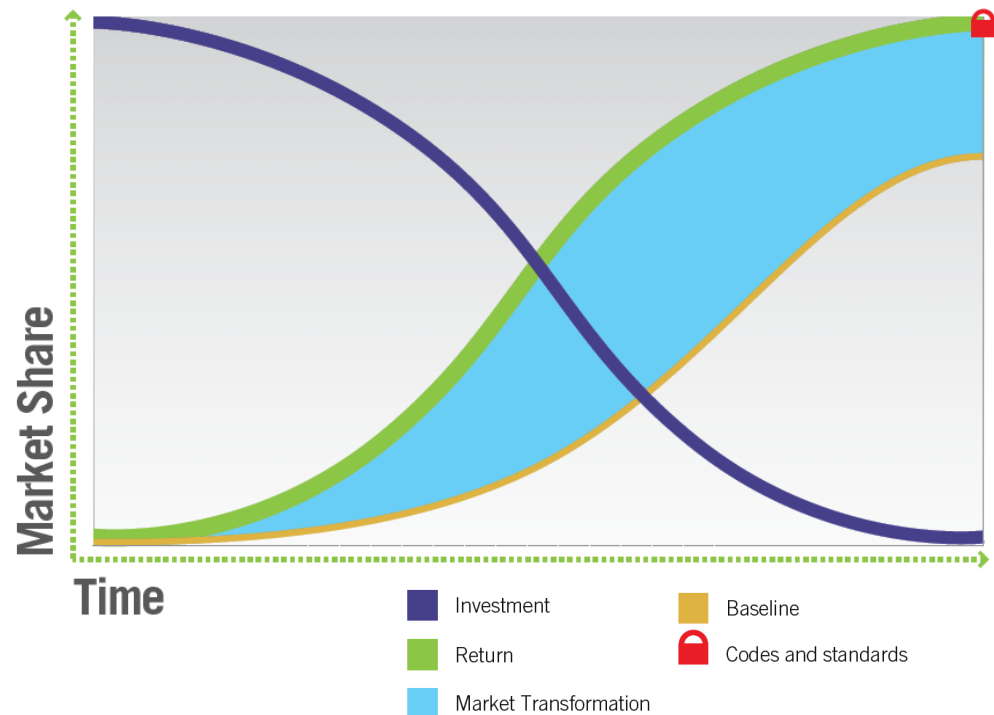
- Problem
- Solution
- Progress
- Contact

Problem

- Cost effectiveness
- Consumer motivation
- Retailer and manufacturer engagement
- Energy efficiency program regulation

Solution - ESRPP

- ENERGY STAR Retail Products Platform (ESRPP) is a nationally coordinated, midstream, market transformation program
- Aligns energy efficiency programs with retailers' business models
- Triggers structural changes in the marketplace toward energy efficiency



Source: Northwest Energy Efficiency Alliance

ESRPP is a Grassroots Effort

Infrastructure

**National Planning, Facilitation,
Monitoring & Support**
US EPA
(Navitas Supporting)



**Local/Regional
Planning & Execution**
Utilities/Sponsors
(Implementation Contractors
Supporting)

ESRPP Task Force

EM&V/Regulatory
Guidance for evaluating
market transformation
programs

Data Requirements
Coordination of national
data services

Product/Specifications
Building consensus for
common portfolio

Legal Agreements
Preparation of universal
participation agreement

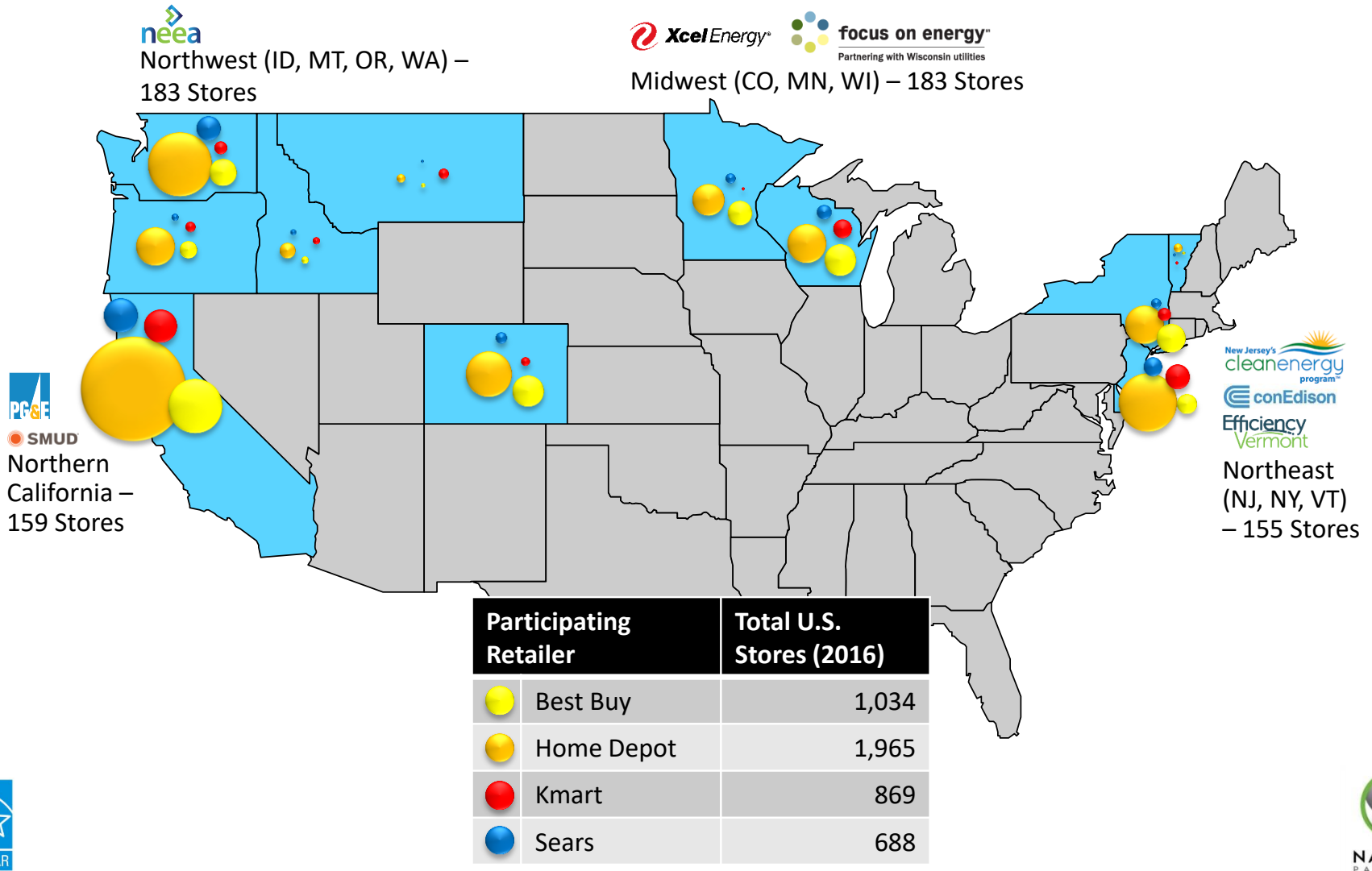
Marketing/Field Service
Design marketing templates
and share best practices

Outreach
Recruit stakeholder
participation to increase
scale

EPA facilitates a national platform and coordinates Task Force Groups



Progress – Participation



2016 ESRPP Pilot Highlights

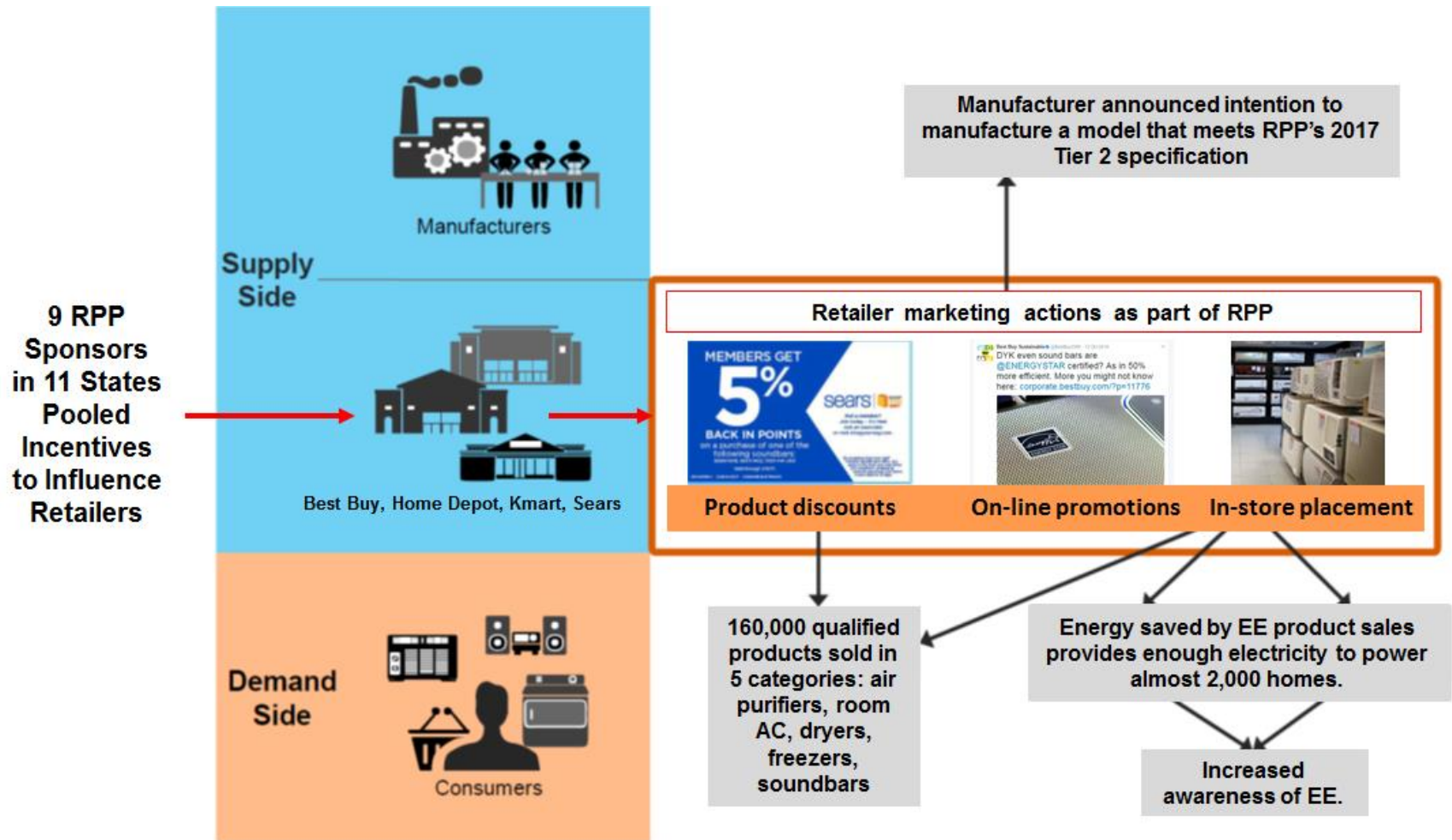


Illustration adapted from Dunn, A., Van Clock, J., Conzemius, S. and Dimetrosky S., "Paradigm Shift Needed! Without it, Midstream Lift Yields NTG Woes for Plug Load Programs," ACEEE Summer Study, August 2016.

Contacts

- www.energystar.gov/esrpp
- Michael Lukasiewicz
- Peter Banwell

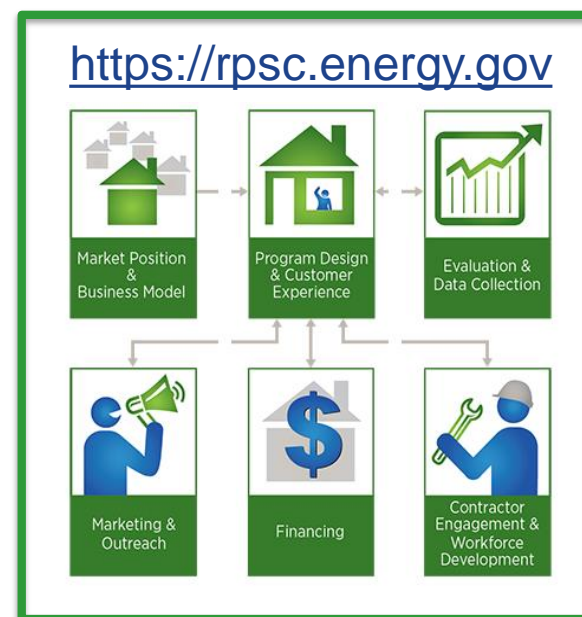
Presentation Highlights: ENERGY STAR Retail Products Platform (ESRPP)

- ESRPP seeks to achieve **midstream market transformation** by incentivizing retailers to promote energy efficient products to customers.
- Downstream programs don't provide enough motivation for the customer.
 - If a retailer saves \$10 on an energy efficient refrigerator, that incentive represents a larger percentage of the retailer's profit than it would have if subtracted from the purchase price for the customer
 - The retailer ultimately decides which products are put on the shelf for purchase by customers
- The **benefits of the program accumulate over time** as market share for more energy efficient products expands with more participation from retailers
- The ultimate goal is to **accelerate the efficiency specifications of new ENERGY STAR products coming to market** from manufacturers
- ESRPP completed a pilot by offering incentives for five different products to retailers
 - The first year demonstrated that collaboration with retailers was possible and effective
 - Saved enough energy to power 2000 homes

Related Resources in the Residential Program Solution Center

Explore resources related to unlocking innovative approaches to program design:

- Read this LBNL [brief](#) highlighting the services and impacts of energy advising with regards to improving customer experience and EE program outcomes.
- Learn about the current state of on-bill programs and insights on key program design considerations for on-bill lending programs in this SEE Action [report](#).
- Explore the [Program Design & Customer Experience handbook](#) for guidance and resources as you go through the process of designing, running, evaluating, and improving a successful residential EE program.



- Check out the latest [Proven Practices](#) post on [Leveraging Broad Program Benefits](#).
- The Solution Center is continually updated to support residential energy efficiency programs—[member ideas are wanted!](#)

2017 Better Buildings Summit

Registration is now open!



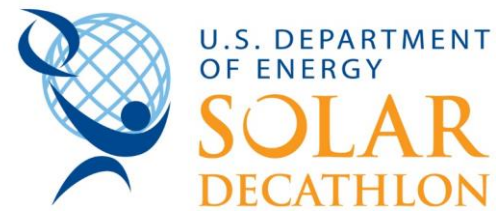
Be sure to [register today](#) for the 2017 [Better Buildings Summit!](#)



Spread the word:

[#BBSummit17](#) registration is right around the corner. Get ready to learn about expert [#EnergyEfficiency](#) enhancements <http://bit.ly/2iZCMsB>

U.S. Department of Energy Solar Decathlon



Oct 5-15, 2017 DENVER

- 13 Collegiate teams compete in 10 contests
 - New for 2017: Innovation and Water
- Winning team best blends technology, market potential, design excellence with smart energy solar production and maximum energy and water efficiency.
- Large free public event – showcases best of clean energy technology
- Denver location: new, mixed use smart community on transit line near Denver International Airport
- Sponsorship Opportunities
- Info: www.SolarDecathlon.Gov



Solar Decathlon 2015 Teams in Irvine, Calif.
Credit: Thomas Kelsey/U.S. Department of Energy Solar Decathlon

GET SOCIAL WITH US



Stay engaged and connected with the Better Buildings Residential Network and our partners from the residential and multifamily sectors!

Follow us to plug into the latest Better Buildings news and updates!

Share with us your top stories on how your organization is accelerating energy savings through efficiency upgrades, strategies, and investment!



[Better Buildings Twitter](#) with [#BBResNet](#)



[Better Buildings LinkedIn](#)

We can't wait to hear from you!

Addenda: Attendee Information and Poll Results

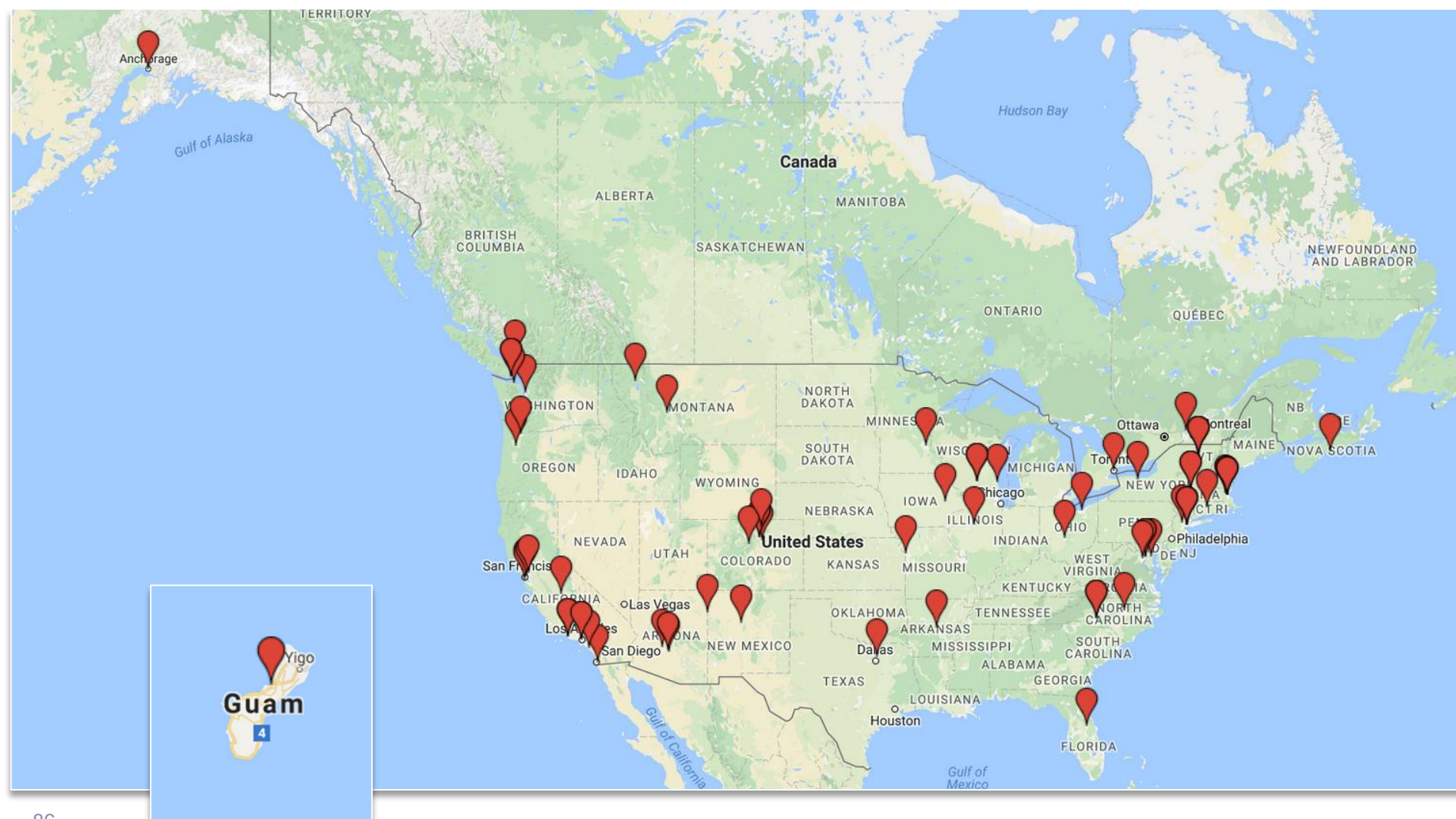
Call Attendees: Network Members

- Alaska Housing Finance Corporation
- American Council for an Energy-Efficient Economy (ACEEE)
- AppleBlossom Energy Inc.
- BC Hydro
- Boulder County
- Cleveland Public Power
- Efficiency Nova Scotia
- Efficiency Vermont
- Energy Efficiency Specialists
- High Country Conservation Center
- Housing Authority of the City of San Buenaventura
- Milwaukee Energy Efficiency
- North Carolina Sustainable Energy Association
- Northeast Energy Efficiency Partnerships (NEEP)
- Vermont Energy Investment Corporation (VEIC)
- Wisconsin Energy Conservation Corporation (WECC)

Call Attendees: Non-Members

- Arizona State University
- Bonneville Power Administration
- Boston Housing Authority
- City Green Solutions
- City of Chula Vista
- City of Seattle
- CivicSpark, Local Government Commission
- County of Ventura
- E Source
- Eileen Tumlin Architecture
- Ekotrope
- Enbridge
- Greater Minnesota Housing Fund
- Honeywell
- Huntington
- ID3 Architecture
- Interstate Power and Light, an Alliant Energy Co.
- Massachusetts Department of Energy Resources
- Missouri Gas Energy
- Montana Department of Health and Human Services
- Navitas Partners
- Off the Grid Renovations
- Oregon Department of Energy
- Passive House Institute US (PHIUS)
- See Change Institute
- Seventhwave
- Solar Habitats
- Sunowner Inc
- The Clark Group LLC

Call Participant Locations



Opening Poll #1

- Which of the following best describes your organization's experience with innovative program design approaches?
 - Some experience/familiarity—**35%**
 - Very experienced/familiar—**30%**
 - Limited experience/familiarity—**27%**
 - No experience/familiarity—**5%**
 - Not applicable—**3%**

Closing Poll

- After today's call, what will you do?
 - Seek out additional information on one or more of the ideas—**72%**
 - Consider implementing one or more of the ideas discussed—**20%**
 - Make no changes to your current approach—**8%**